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THE PLANT DISEASE REPORTER

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THE PLANT DISEASE SURVEY, DIVISION OF MYCOLOGY AND DISEASE SURVEY
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The Plant Disease Reporter is issued as a service to plant pathologists throughout the United States. It contains reports, summaries, observations, and comments submitted voluntarily by qualified observers. These reports often are in the form of suggestions, queries, and opinions, frequently purely tentative, offered for consideration or discussion rather than as matters of established fact. In accepting and publishing this material the Division of Mycology and Disease Survey serves merely as an informational clearing house. It does not assume responsibility for the subject matter.

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POTATO LATE BLIGHT FOUND IN CULL PILES IN IOWA AND MINNESOTA

Dr. I. E. Melhus reports:

"Hooker, Vestal, and I found late blight [Phytophthora infestans] on cull piles in two different places in Iowa on June 12 and 13. It was quite apparent from the amount of disease that the initial spread from the tubers was of some standing. Minnesota reports late blight on cull piles at Hollandale. Hollandale is an intensive potato area located in the southern tier of counties. It should be emphasized that in both Iowa and Minnesota the cull piles were within a 'stone's throw' of fields of potatoes.

"The weather conditions for the past week have been highly favorable for the initial development of late blight in the fields." (From letter to members of the Late Blight Committee, Upper Mississippi Valley Plant Pathologists).

Late blight has not yet appeared on Long Island, according to reports in the New York State College Departments of Entomology and Plant Pathology, Weekly News Letter for June 12.

Carlton F. Taylor reports that the foliage on one plant in one garden near Lexington, Virginia, appeared to be injured by late blight. When observed (during the period June 1-9), the weather was hot and dry and the identity of the disease was not confirmed by the presence of mycelium or by other means.

POTATO DISEASES IN MAINE

Robert C. Cassell

Condition of Potatoes left in the Ground Over Winter: Potatoes were examined in the Winthrop-Clinton area that were dug this spring. This is the only area in Maine that received sufficient snow coverage to protect potatoes all winter that were left in the ground undug last fall. Potatoes left in the ground in the larger Central Maine potato area of Dexter to La Grange and in Aroostook County could not be salvaged this spring as there was not enough snow coverage to protect them. About 5000 acres of potatoes were left in the ground over winter in Aroostook County. Not many potatoes were left in the ground and dug this spring in the Winthrop-Clinton area, probably not over 100 to 200 acres at the most. However, the potatoes dug this spring were in good condition. Wire worms were more prevalent in the tubers this spring than if the potatoes had been dug in the fall and net necrosis (leaf-roll virus) was fairly severe in the Green Mountains seen. The quality of the spring-dug potatoes was good and apparently all of the good potatoes were sold as table stock or for seed on the local market.

Diseases in Potato Fields. Fourteen fields in Milo, La Grange, Dover-Foxcroft, and Corinna were examined for Rhizoctonia (R. solani). The average for the 14 fields was 21% infected plants. No. "rhizoc" was found in 3 fields and the most found in any one field was 75% of the plants examined.

Leaf-roll (virus) was severe in one field in La Grange. No counts were made as the plants were too small to get an accurate record. Inspection of the leaf-roll check rows in Dr. Folsom's leaf-roll plots at Highmoor Farm revealed an obviously heavy infection of the plants last year.

Two fields were found in Maine where poor fertilizer placement had caused rot to the seed pieces and some rot to the stems of the plants. In one field every hill examined revealed the seed piece to be in some phase of decay with the fertilizer in contact with the seed piece and clinging in excess proportions to the roots of the young plants. Plant growth was extremely irregular and there were skips in the field. There was less injury in the second field, but even here about 40% of the seed pieces were decayed with telling effects to the stand. It has been very dry in Central Maine this year, a condition which undoubtedly will be a contributing factor to fertilizer injury in cases of poor placement.

The heavy frost of June 4 caused only a slight amount of damage to potato fields in Central Maine. Although the frost was killing to plants which had emerged, very few fields were far enough advanced to be damaged to any appreciable extent. At the present writing plants in many fields have not yet emerged. In fact a few fields are not yet planted.

Three large potatoes dumps were seen in central Maine. The amount of potatoes in each dump ranged from 3 or 4 cars to several cars. In only one of the 3 dumps had any precaution been taken to date to prevent sprouting and a possible spread of late blight in the future.

Winter Potato Shrinkage in Aroostook County. Reliable information was obtained at the State House in Augusta to the effect that the recorded shrinkage losses of potatoes in Aroostook County this winter were about 20% for table stock and 30% for certified seed. What the actual losses were is not ascertainable, however, it can probably be assumed to be at least 5% to 10% greater especially in the table stock.

EMERGENCY PLANT DISEASE PREVENTION PROJECT. June 12 - 14.

TOMATO DISEASE SURVEY IN PENNSYLVANIA

Leon J. Tyler

During the period June 5 to 10, fields of tomatoes, were examined for diseases. The fields entered were mostly located in Lancaster and York Counties in southern Pennsylvania.

A total of 35 different and widely separated tomato fields were entered. Usually, 100 plants selected at random in each field were examined; occasionally 200 were examined. An effort was made to contact the growers of the different plantings to obtain facts concerning source of the plants, date of transplanting, disease control practices, etc.

The disease, Alternaria stem canker, caused by Alternaria solani, was found in 23 of 35 plantings. The percentage prevalence of stem canker in the different fields ranged from 1 to 69. The average percentage of plants diseased was 19 in Lancaster County and 18.5 in York County fields. In 6 of the more destructively affected plantings the stem-canker organism had attacked the leaves of 1 to 11% of the diseased plants.

The source of the plants appeared to have a definite bearing on the number of plantings having stem-cankered plants and on the prevalence of diseased

plants within the different plantings.

Seventeen of 21 plantings set with Georgia State certified plants contained Alternaria stem-cankered plants; 3 of 3 plantings set with North Carolina certified plants exhibited the disease, while 2 of 8 set with locally (Pennyslvania)-grown plants contained some stem canker. Based upon all plantings, i.e. plantings with and those without diseased plants, 19.9% of the Georgia plants examined exhibited stem canker; 2.6% of the North Carolina plants examined contained stem cankers; while but 0.62% of the locally grown plants examined contained cankers.

Information obtained from local growers of transplants showed that they followed the prescribed practices for disease control in the seedling beds: Tomato seed was hot-water treated and this was followed by the application of a seed protectant; after the seedlings emerged low soluble copper sprays were applied at frequent intervals. It appears that these disease control practices explain the low percentage of Alternaria stem canker in transplants produced by local Pennsylvania growers of transplants.

Some evidence was obtained which indicated that the Alternaria stem canker was intensified somewhat in the transplants of southern origin because of the inability of some growers to set the plants in their fields promptly upon the arrival of the transplants from the south. Unfavorable weather caused the delay.

By far the greater number of plantings were comprised of the variety Rutgers, while plantings of Bonny Best, Garden State, Penn Hart, and Marglobe were infrequently encountered.

The earliest of the planting dates given by growers was May 10, the latest was June 1. The majority of the plants examined were transplanted between May 15 and 25. If the plants were not diseased the earlier plantings appeared to have made more rapid progress than late plantings. Diseased plants in early plantings appeared to have made less rapid progress than diseased plants in late plantings. It is probable that warmer weather of late aided diseased plants while the cooler weather which followed early plantings was harmful to diseased plants.

Almost all transplants, whether southern- or northern-grown, were supplied to the growers by commercial canning concerns. Only 3 local growers produced their own transplants, while the transplants used in 3 other plantings were produced by a Lancaster County seed house. As indicated above these local growers of transplants were quite successful in producing healthy transplants.

Eleven of 35 plantings contained mosaic (virus)-diseased plants, the percentage of diseased plants ranged from 1 to 3.

EMERGENCY PLANT DISEASE PREVENTION PROJECT.

SUMMARY OF DISEASE SURVEY ON TOMATO PLANTS IN SOUTHERN GEORGIA

G. M. Stone

The tomato plant season just ended was a most hetic and trying one for all concerned. However, through sheer determination on the part of the growers, the greater part of the principal tomato-growing areas were supplied with sufficient plants to set their acreages.

A summary of disease developments by areas is given in table form below. These figures were obtained in part from the State Department of Entomology, Plant Inspection Service.

Summary of Disease Survey on Tomato Plants in South Georgia for 1944

Section of State	Total Acres	Yield per Acre	Acres Rejected for Certification because of: Early Blight Leaves only	Early Blight Leaves & Stems	Bacterial Wilt	Nematodes	Total Diseased
Valdosta Cairo	658	91,000		419			419
Moultrie	1811	110,000	170	253	194	7	624
Claxton Pembroke	1440	74,000	130	820			950
Tifton	1288	100,000	88	88		6	182
Albany	256	124,000	53				53
Totals and Averages	5453	99,800	441	1580	194	13	2228
Percentage of Total	100		8%	29%	3.6%	.3%	40.9%

It will be noted that Early blight (Alternaria solani) was prevalent over the entire area--37% of the plants having been rejected for certification because of it. Bacterial (Bacterium solanacearum) wilt and nematodes were of minor importance this year. Ordinarily, plants having early blight are either unsalable or sold for a much reduced price. However, because of the scarcity of plants this year, the "Blighted" plants sold for full price; so that the growers this year did not experience a loss from the disease.

The greater part of the early blight plants came from fields planted early for the Eastern market. Comparatively few "Blighted" plants were shipped to the Middle-West. A follow up survey in those areas would be worth while so as to determine the extent of development of early blight in the field. It is suggested that, in case such a survey is attempted, the fieldmen of the larger canning companies be contacted and as much as possible be learned about the condition of the plants used by individual growers.

EMERGENCY PLANT DISEASE PREVENTION PROJECT.

TOMATO DISEASES IN EAST TEXAS

George E. Altstatt

A recent survey was made (June 5-9) of tomatoes in the commercial producing area of East Texas (Robertson, Anderson, Cherokee, Nacogdoches, Wood, Van Zandt, and Henderson Counties). This area has had a difficult growing season occasioned by frequent heavy rains and windy periods, particularly when plants were young and tender, and where plantings were made in soils affording poor drainage, much drowning or scalding resulted. Some areas suffered hail damage. The present outlook indicates a reduction in yield due to excessive water approximating 30 to 40 percent.

Diseases observed included:

Bacterial: Continued wet weather has been instrumental in the development of bacterial diseases. Bacterial canker [Corynebacterium michiganese] had damaged some plants and fruits in most areas. Bacterial spot [Xanthomonas vesicatoria] was severe in fields in Robertson and in Van Zandt Counties. Bacterial speck [Pseudomonas tomato] was prevalent in these counties also; a few fields observed showed 100% of the fruits marked by either spot or speck or both. Bacterial wilt [Pseudomonas solanacearum] was found in Robertson and Cherokee Counties on occasional plants.

Fungous: Early blight (Alternaria solani) and Septoria blight (Septoria lycopersici) were especially prevalent in Cherokee and Van Zandt Counties, and present in many of the others. In most cases these defoliating organisms were just becoming established, and had not yet done serious damage. Farmers were advised to begin control measures if they had not already done so. Small stem cankers caused by Alternaria solani were found in Cherokee and Van Zandt Counties.

Southern blight (Sclerotium rolfsii) was found occasionally, attacking plants and fruits in contact with the soil.

Fusarium wilt (Fusarium bulbigenum var. lycopersici) [F. oxysporum f. lycopersici] was encountered occasionally, but has not been serious, owing to the use of resistant varieties.

Virus: Ordinary tomato mosaic was observed occasionally. Bunchy top (undetermined, possibly virus) varied, one field showed an average of 10% of the plants affected. Only 1 plant affected by fern-leaf was seen (Cherokee County).

Fruit Defects: Catface and blossom-end rot (physiological) were the principal causes for culls in field and packing shed. Bacterial speck, spot, and canker also accounted for other rejections. "Puffs" or "pops" accounted for a small percentage. Fruit rots included soil rot (Rhizoctonia solani) and buckeye rot (Phytophthora parasitica). Worm damage was found in all fields, and was serious where no insecticides had been used.

EMERGENCY PLANT DISEASE PREVENTION PROJECT.

DISEASES OF GREENHOUSE TOMATOES IN MISSOURI

T. W. Bretz

In the Kansas City and St. Joseph areas, greenhouses devoted to the production of vegetable crops were visited during the week ending June 10. The tomato crop is just reaching maturity. In most houses a few fruits are coloring and in only one house had a picking (the first) been made.

In the Kansas City area all houses were having trouble with poor fruit set. This is attributed to poor environmental conditions by the growers. This may be substantiated in part by the fact that a rather high (estimated 5%) of the fruits were "cat-faced".

Fusarium wilt (Fusarium bulbigenum var. lycopersici) was just beginning to be pronounced in most of the ranges by the appearance of completely wilted, dead plants. Wilt damage varied from a trace to as much as 10%.

Mosaic (common tobacco-mosaic virus) infection was present in all ranges. The percentage of plants affected ranged from 2 to 8% in the various houses. The affected plants did not appear to be seriously stunted nor was the fruit production seriously affected, indicating that the infection had occurred after the plants had attained a reasonably good growth. A few plants in each of the ranges visited showed the "shoe-string" symptom characteristic of cucumber mosaic. These plants were very much dwarfed and there was little or no fruit production.

Blossom-end rot (physiological) was likewise common in all ranges affecting from 1-5% of the fruits set.

Buckeye rot (Phytophthora parasitica ?) infection of the fruits was observed affecting an estimated 2 to 3% of the crop. Since it is the practise of the growers to pick fruits affected with blossom-end rot and buckeye rot as they find them in working through the ranges, it is likely that the estimated percentages given above are not representative of the real loss that occurs.

Leaf mold (Cladosporium fulvum) appeared to be a major problem in only one range, where adequate ventilation was impossible owing to the density of the foliage and poor facilities for ventilation in the construction of the range. In this range practically all of the plants were infected and approximately 50% of the foliage was diseased, the lowest leaves to the extent that they were yellowing. Only a trace of leaf mold infection was observed in the other ranges.

In the St. Joseph area the greenhouse tomatoes were in good condition. Fruit set was good, although about 1% of the fruits were "cat-faced". A trace of mosaic was observed but apparently was causing no damage. Fusarium wilt had not as yet appeared, nor was there any evidence of blossom-end rot, buckeye rot, or leaf mold.

EMERGENCY PLANT DISEASE PREVENTION PROJECT

OTHER REPORTS ON DISEASES OF POTATO AND TOMATO

BLACKLEG ON POTATO IN VIRGINIA: Blackleg (Erwinia phytophthora) had affected as high as 13% of the plants in garden plots planted with certified Irish Cobbler seed stock in eastern Virginia. -- Carlton F. Taylor, Emergency Plant Disease Prevention Project. June 1 to 9.

POTATO MOSAIC IN COLORADO: In the Gilcrest district in Weld County early potatoes are from 4 to 8 inches in height. A slight amount of mosaic (virus) was found in all fields inspected.

Cull piles outside of storage cellars were also inspected for diseases. As of this date (June 10) none were found. These cull piles will be inspected throughout the season. -- E. W. Bodine, Emergency Plant Disease Prevention Project.

POTATO MOSAIC IN OREGON: In the vicinity of Gresham in Multnomah County, June 8, scattered fields of from 2 to 7 acres were noted to average from 30 to 50% mosaic. As high at 80% infection was noted in one small planting of 2 acres. These fields were all of early varieties grown on truck-garden farms. In several cases, information was obtained regarding the source of seed. The seed came from plantings made with certified seed the year before; since these fields gave a satisfactory crop seed was saved from them and used this year without considering foliage symptoms of disease that might affect the subsequent crop. -- Lytton W. Boyle, Emergency Plant Disease Prevention Project.

TOMATO WILT IN MISSISSIPPI: About 10% of the plants in a fairly large field near Picayune were affected by Fusarium wilt. -- Douglas C. Bain, Emergency Plant Disease Prevention Project. June 5 - 10.

REPORTS ON DISEASES OF OTHER VEGETABLE CROPS

RHIZOCTONIA ON BEAN IN NEW YORK: Traces of Rhizoctonia have been found in some fields of snap beans in Nassau County on Long Island. -- F. M. Gordon, Weekly News Letter, June 12.

BEAN DISEASES IN MISSISSIPPI: The week of June 5 to 10 was spent in the Laurel-Meridian-Prentiss-Columbia area. Web blight (Rhizoctonia microsclerotia) was found in 2 fields of bunch beans, each about 1/4 acre, one near Laurel and the other in Walthall County. The disease was rather severe in Walthall County. It was of interest to note that besidial mats [Corticium microsclerotia] as well as sclerotia were found on some of the leaves. Powdery mildew (Erysiphe polygoni) appeared to be spreading in the Walthall County field. A trace of southern wilt (Sclerotium rolfsii) was noted in a garden near Meridian. -- Douglas C. Bain, Emergency Plant Disease Prevention Project.

A CHLOROSIS OF BEAN IN OREGON: In the Scappoose drainage area in Columbia County, visited June 6, over 200 acres of beans for processing were planted, mostly with the Round Pod Kidney Wax variety (bush type). These have made poor development. From a chlorotic to an albino condition occurs on the primary leaves of some plants. In others, the primary leaves may appear small but normal in color, but subsequent growth of trifoliate leaves is chlorotic. In still other instances, the primary leaves dropped and only a chlorotic tip is evident. Development of the plants in the field as a whole was slow. From all evidence that could be found, it appears that unfavorable cool cloudy weather has caused this condition. This

area along the River is probably a pocket for drainage of cool air, and since the water table is inclined to be high the soil may not warm up readily. The yellow Kidney Wax variety did not withstand such conditions as well as green varieties of pole beans. According to the growers, a good crop was produced on these fields last year. This severe setback will probably cause a very material reduction in the current crop. -- Lytton W. Boyle, Emergency Plant Disease Prevention Project.

BOLTING AND DISEASES OF CABBAGE IN NEW YORK: In Niagara County clubroot [Plasmodiophora brassicae] is showing up on early cabbage in places where it had not occurred previously according to D. M. Dalrymole, June 5.

In Nassau County on Long Island, F. M. Gordon reports (June 5) that some cabbage set about the first of April is going to seed. There were about 25% seeders in one planting and more were developing.

In Erie County L. E. Curtis (June 12) reported that cabbage yellows [Fusarium oxysporum f. conglutinans] infection has been in evidence since late May. Severity of infection seems to be greater on the non-irrigated, light-textured market garden vegetable soils. A field set to Resistant Golden Acre inspected June 8 showed a rather high percentage of infected plants. -- Reports from Weekly News Letter for dates indicated.

DOWNY MILDEW OF CABBAGE IN PENNSYLVANIA: Downy mildew, caused by Peronospora parasitica, was noted June 8 on transplants being sold by a dealer at Smoketown. Most of the seedlings in some packages waiting for delivery were severely affected, while plants in other packages appeared to be free from the disease. -- Leon J. Tyler, Emergency Plant Disease Prevention Project.

CABBAGE DISEASES IN VIRGINIA: Downy mildew was present on the lower leaves of most plants in several acres grown for plant sale (southeastern Virginia). Loss from the disease appeared to be negligible since most of the plants were dying due to drought.

Sclerotinia sclerotiorum had caused the death of 2 plants in one cabbage field ready for cutting. -- Carlton F. Taylor, Emergency Plant Disease Prevention Project. June 1 - 9.

DISEASES OF CABBAGE AND CAULIFLOWER IN COLORADO: A few cabbage plants in Denver County were found affected by yellows.

Downy mildew was found to be very general on hotbed plants of cauliflower for late plantings in Adams County. -- E. W. Bodine, Emergency Plant Disease Prevention Project. Week ending June 10.

CELERY BLIGHTS IN COLORADO: Slight amounts of early blight (Cercospora apii) and late blight (Septoria apii) were found on hotbed celery (Golden type) grown for the early market in Denver County. -- E. W. Bodine, Emergency Plant Disease Prevention Project. Week ending June 10.

LETTUCE DISEASES IN NEW YORK: In Nassau County on Long Island gray mold rot [Botrytis sp.] of lettuce set in the field has shown up in serious proportions on another farm which generally is free from this disease (May 29). Head lettuce of the Iceberg type is not heading properly on one farm. Big vein (virus) of Romaine lettuce is very noticeable on one farm (June 12) -- F. M. Gordon, in Weekly News Letter for dates given.

Greenhouse operators generally in the market garden vegetable sections of Erie County have had rather heavy losses on lettuce seedlings caused by drop due to Sclerotinia. -- L. E. Curtis, in Weekly News Letter June 12

VIRUS DISEASES OF LETTUCE IN COLORADO: A few plants affected with mosaic were found in Denver and Adams Counties, and few showing symptoms of what appeared to be those of the big vein disease in Denver County. -- E. W. Bodine, Emergency Plant Disease Prevention Project. Week ending June 10.

DISEASES ON LETTUCE IN OREGON. In the vicinity of Gresham, Multnomah County, June 8, traces to small percentages of drop (Sclerotinia sclerotiorum) were noted in the early crop of lettuce. Losses were less than noted last season in the late crop in the same area.

Plants showing tough yellowed and malformed leaves were quite prevalent in some instances. These did not show flecks in the heart leaves nor the extreme stunting that has been described for aster yellows (virus). In addition to the yellowing, the outer leaves were frequently marked with flecks. The root systems of such plants appeared to be healthy, but the heads were about 2/3 of the average size for normal plants. Typical yellows specimens were collected from this area last season and it is suspected that this condition may be a modified expression of the disease in the early crop.

Tipburn (physiogenic) was noted in certain fields where growth appeared to have been rapid and tender, and will cause loss of grade on the market although the heart of the head was of excellent quality. -- Lytton W. Boyle, Emergency Plant Disease Prevention Project.

EFFECT OF SEED TREATMENT ON FUSARIUM ROOT ROT OF PEAS IN MAINE: Mr. Bailey of Highmoor Farm has made some field counts of treated and untreated seed stands in the Newport-Exeter area where from 2 to 3 thousand acres of peas are grown. The counts indicate that stands are from 10 to 205 better from treated seed. In one 20-acre field at Newport, seed for half the field was treated and the stand in this part was 50% better than in the untreated part. Spergon is used almost exclusively for seed treatment in this area. -- Robert C. Cassell, Emergency Plant Disease Prevention Project. June 12 - 14.

ROOT ROT ON PEAS IN NEW YORK: Pea root rot [cause not designated] infection is rather widespread and severe in the market garden vegetable sections of Erie County. Growers are too much inclined to believe that this is a result of "burning out" due to dry weather, which of course, may be a contributing factor, -- L. E. Curtis, in Weekly News Letter, June 12.

PEA DISEASES OBSERVED IN OREGON: Plantings of Telephone type peas in the vicinity of Gresham, Multnomah County, June 8 appeared to be in good condition. Mosaic (virus) was rather prevalent in the outer parts of the fields. Its spread had been controlled in most cases and it will not reduce the yield of fields as a whole materially.

Canning peas in the area between Hillsboro and Newberg in Washington County are planted during February. Root rot (cause undetermined) apparently had not developed until late in the growth of the plants. At this

time (June 9) it is estimated that it may reduce the crop by about 10%. Peas showed signs of deficient moisture during the last 10 to 14 days before harvest.

Blotch (Septoria pisi) was evident on plants that were more severely damaged by root rot. The fungus was fruiting abundantly on the lower leaves, and rarely on the stems, of such plants. -- Lytton W. Boyle, Emergency Plant Disease Prevention Project.

BLACKROOT OF SPINACH IN NEW YORK: Fusarium blackroot of spinach is showing up earlier this year in the Valley Stream area of Nassau County on Long Island, probably because of the high temperatures. -- F. M. Gordon, Weekly News Letter, June 5.

RUST AND DOWNY MILDEW ON SPINACH IN COLORADO: Rust (Puccinia sarcobati) [P. aristidae][1] was found in Jefferson and Adams Counties. According to Mr. McKune of the Federal Inspection Service approximately 5% of the spinach received at the loading platforms has been turned down for shipment.

Downy mildew (Peronospora effusa) was found to be widespread in Adams County but was causing only a slight amount of damage. -- E. W. Bodine, Emergency Plant Disease Prevention Project. Week ending June 10.

DOWNY MILDEW ON SPINACH IN OREGON: About 5 acres of comparatively late crop in the vicinity of Gresham was 100% severely affected by downy mildew. Evidence of mites that had caused severe puckering of the leaves was also noted. -- Lytton W. Boyle, Emergency Plant Disease Prevention Project. June 8.

DISEASES ON SMALL GRAINS IN VIRGINIA AND WEST VIRGINIA

C. F. Taylor

During the period June 1 - 9, barley and wheat fields were examined in Virginia, and trial plots of wheat at Wardensville, West Virginia, were rechecked.

BARLEY, winter.

Sixteen fields totalling 127 acres were examined in Rockingham, Augusta, and Rockbridge Counties, Virginia on June 1 to 3. At this time a few fields were ready for harvest.

Smut, loose (Ustilago nuda) was found in 15 of the fields, but in less than 0.1% infection in 5 of the fields. The highest smut infection found was 17% in a small field; the other fields ranged from 5% downward. In the 16 fields infection averaged 2.34%; weighted on an acreage basis it averaged 1.70%.

Smut, covered (Ustilago hordei) [U. jensenii] was found in 4 of the 16 fields. In these fields 1.5, 1.0, 0.3 and 0.1% smutted heads were found.

Stripe (Helminthosporium gramineum) was found in 6 fields. Percent in-

[1] [This disease was reported as occurring on spinach from the Denver area of Colorado last year, by G. B. Ramsey, PDR 27 (12/13):255. July 1/15,1943.]

fected plants and acreages were as follows; 15% (5), 13% (4), 1.6% (25), 1.5% (8), and a trace in each of 2 fields totalling 20 acres. In 2 of these fields formaldehyde-treated seed had been sown. The ineffectiveness of formaldehyde in controlling stripe was called to the attention of the County Agricultural Agent in that county.

Spot blotch (Helminthosporium sativum). In most of the fields leaf injury was appreciable.

Powdery mildew (Erysiphe graminis var. hordei) varied with location and density of growth. Injury was severe in sections where rainfall had been abundant.

Leaf rust (Puccinia anomala) was found as a trace in 5 fields.

Scab (Gibberella saubinetii) [G. zeae] was causing slight loss in most fields; in one field 20% of the heads had affected spikelets.

WHEAT, winter.

Fields numbering 31 and totalling 463 acres were visited in Rockingham, Augusta, and Rockbridge Counties, Virginia. The trial plots of farmer's seed at Wardensville were examined in cooperation with Dr. J. G. Leach. In addition a few wheat fields were observed in southeastern Virginia. However, these fields were visited because of the known presence of plant diseases rather than in a random survey; hence they are not included in the estimates of disease prevalence. No grower questioned knew the name of the variety grown.

Loose smut (Ustilago tritici). In the fields examined in the Shenandoah Valley Counties the percentage of smut observed was 0.86 as an average of fields and 0.79 when the smut occurrence was weighted on an acreage basis. Eighteen of these fields had less than 1% smutted heads. A recheck of the 37 lots of wheat from farmers' drills in West Virginia, planted at Wardensville, West Virginia, resulted in a reduction of the smut counts from the previously reported 1.21% to 1.04%. The first counts were made when a number of lots had few heads developed. One field in Isle of Wight County, Virginia had at least 10% loose smut.

Leaf spots (unidentified) were present in all fields. In most cases the loss caused was slight.

Scab was affecting few spikelets in any field visited. In the trial plots, with the fungus fruiting on corn stubble in the field, the disease was more abundant. Here the loss was very slight.

Glume blotch (Septroia nodorum) was present as a trace in most fields. In 2 early fields 40 and 50% respectively of the heads were affected.

Powdery mildew (Erysiphe graminis var. tritici) was observed on a few leaves in 8 of the 28 fields. Loss was negligible.

Leaf rust (P. rubigo-vera var. triticina) was present on few leaves in most of the fields. It was present on many leaves in but 3 fields.

Stem rust (P. graminis var. tritici) was observed on a few culms at Wardensville, West Virginia, June 8.

OATS.

Loose smut (Ustilago avenae). At least 15% of the plants were affected in one field of winter oats in Nansemond County, Virginia. Most fields in this section showed little smut. Spring oats in West Virginia are now developing heads on the earliest varieties. So far, reports of smut have been limited to chance observance of early fields.

EMERGENCY PLANT DISEASE PREVENTION PROJECT.

DISEASES OF WHEAT AND OATS IN MISSOURI

T. W. Bretz

During the week ending June 10 a survey devoted principally to small grains (wheat and oats - no observations on rye and barley) was made from the north-central section of the State to the vicinity of St. Joseph in northwestern Missouri. Observations were made in Howard, Cooper, Saline, Lafayette, Jackson, Clay, Platte and Buchanan Counties.

WHEAT - The stage of the development of the crop ranged from the milk to the soft dough stage. The most striking change in the disease situation during the past week has been the increase in the general prevalence of stem rust . As reported in the survey for the preceeding week, the first stem rust infections were found in only two locations in Callaway County on May 31. During the survey just concluded, stem rust was found in 93% of the fields examined and in every county visited. The amount of stem rust varied greatly in individual fields. In the majority of cases only a trace of infection was observed, but in approximately 20% of the fields, from 25% to 100% of the plants were infected. In general the severity of the infection was light and in no instance did it exceed 5%. With weather conditions favorable for rust development prevailing, it appears likely that stem rust will become increasingly prevalent and severe.

Leaf rust has also increased in prevalence and severity. In practically all fields the prevalence was 100% and the intensity of infection averaged approximately 10%.

Loose smut infection was noted in every field examined. The percentage of smutted heads ranged from a trace to as much as 20% in individual fields averaging 7% for all fields observed.

Scab was found in the majority of fields. The number of heads infected ranged from a trace in many fields to 8% in a few plantings, averaging 1.5% for the area visited.

Speckled leaf blotch (Septoria tritici) no longer appears to be active. Evidence of moderately heavy infections on the older foliage was observed in practically every field, however. Glume blotch (Septoria nodorum) infection was observed in a few fields. In general the infection involved only a few glumes per head on a small percentage of plants.

OATS - The majority of fields were in the boot to heading stage of development. A leaf spot, tentatively identified as halo blight (Phytomonas [Pseudomonas] coronafaciens), was observed in every field. The percentage of plants affected ranged from a trace to 100. In general the infections were not severe, although in a few instances the lower leaves apparently had been killed by this disease. Crown rust (Puccinia coronata) infection was observed in only 3 fields, these located in Jackson and Platte Counties. Only a trace of infection could be found in scattered locations in these fields. No stem rust infections were found. Loose smut infection was noted affecting a trace to 1% of the plants in 3 fields. Since many of the plants in these fields had not yet headed, an accurate count of smutted heads was not possible.

EMERGENCY PLANT DISEASE PREVENTION PROJECT.

DISEASES OF CEREAL CROPS AND FLAX IN MINNESOTA AND SOUTH DAKOTA

Ian W. Tervet

During the period ending June 9 a survey was made of cereal crops and flax from St. Paul west to Morris, Minnesota and in north-east and north-central South Dakota.

On Oats, halo blight is still the most conspicuous disease, heavy infections being found in western Minnesota and in the James River Valley of South Dakota in the vicinity of Aberdeen. All oat fields examined between St. Paul, Minnesota and Aberdeen, South Dakota were infected to some degree. At the Morris Experiment Station of the University of Minnesota, where halo blight was very severe at the end of May, few fresh lesions were seen. Infection of oat varieties there indicated that Gopher was more resistant to halo blight than Vicland and Tama. Selections from several crosses of oat varieties varied in reaction between Gopher and Vicland.

Helminthosporium avenae leaf spot was seen in one oat field near Howard Lake, Minnesota but infection was very light.

Almost all Wheat and Barley from Lisseton, South Dakota west to Ipswich were moderately to heavily infected with crown and root rot, probably Helminthosporium spp. for the most part but with some Pythium arrhenomanes.

Flax. Rust (Melampsora lini) is common in western Minnesota, but none was seen in South Dakota.

Stands of flax in western Minnesota have been reduced by seedling blight and root rot (Colletotrichum linicolum and Fusarium spp. probably). It is not uncommon to find 5 to 10% of the plants dead or dying and occasional heavier infections have been seen. In one flax field near Beardsley, Minnesota where a few plants were already flowering on June 8, 20% dead or dying plants were seen. The roots of these plants were severely rotted and discolored, the tap root having reddish sunken lesions. Few lateral roots were developed. From similar roots, Colletotrichum linicolum and Fusarium spp. have been isolated and it is thought probable that these fungi are associated with much of the root rot.

In one field near Aberdeen, South Dakota, about 40% of the flax plants had lesions near the cotyledons or between the cotyledons and the ground line . Many of the stems had broken over at the lesion and many of these plants had died. A very few plants, where stem breaking had occurred, were developing new stems but the majority of the severely injured plants had been killed. While isolations from lesions have not yet been made, nor microscopic examination attempted, the symptoms of the disease resemble closely the stem breaking caused by Polyspora lini. Other flax fields in the same area were free from stem breaking, and it is possible that seed from an area where P. lini is more common was planted.

West of Ipswich, South Dakota flax on light soil had 10% of the plants with heat canker and about 1% of the stems had broken over at the canker. This case of stem breaking was quite distinct from that seen further east near Aberdeen, and seemed unquestionably to result from weakening of the stems by heat canker.

EMERGENCY PLANT DISEASE PROJECT.

CEREAL DISEASE SURVEY IN KANSAS AND NEBRASKA

Stuart M. Pady

In Nebraska the wheat is heading in the two lower tiers of south-central and southeastern counties, and oats and barley are just beginning to head in the same area. From June 6 to 9, a survey was made of the cereal diseases in this area.

Wheat - Stem rust of wheat was first observed in Kearney County on June 8, a trace being found on one plant. Subsequently it was found in Franklin, Webster, Nuckolls, Gage, Pawnee, Johnson, and Richardson Counties. In all cases the amount was slight and careful search was usually required before it could be found. Most of the lesions were primary with occasionally some secondary infection.

Since leaf rust was first found (May 12) it has developed rapidly and was present in all 38 fields examined, ranging in amount from a trace to 30%. In general the amount was slight although practically every plant is now infected to some degree. In only 4 fields could the amount of leaf rust be described as heavy. One such field in Saunders County had indications of overwintering.

Speckled leaf blotch is present in every field but the amount of infection shows great variation. In most fields the lower leaves have been killed and the fungus is now working in the middle zone where lesions with yellow and dead leaves are evident. Where the disease is more advanced the upper leaves are attacked. One field in Pawnee County had many infections on the flag leaves. In this case Septoria is causing considerable damage. At the present time, however, such fields are not abundant in Nebraska and the damage being caused by this parasite probably would be considered as moderate.

Loose smut is just beginning to appear. Stinking smut (Tilletia sp.) was found in 1% of the plants in a field of Chiefkan in Richardson County.

A leaf spot (Helminthosporium sp.) is occasionally found in some fields, particularly in the eastern counties.

A small black leaf spot, reported earlier, which is bacterial in nature, was abundant in one field in Dodge County and was present in trace amounts in fields in Hall, Adams, Franklin and Webster Counties. Tenmarq wheat is especially susceptible.

Scab was present in small amounts in fields in Jefferson and Richardson Counties.

Oats - A leaf spot (Helminthosporium avenae?) was the most conspicuous of the oat diseases, appearing in 6 out of 10 fields and being especially abundant in Saunders County. Crown rust was found in trace amounts in 4 fields. Stem rust was found as scattered isolated infections in 2 fields. Smut (Ustilago sp.) was becoming evident in the fields in the southern counties that were beginning to head.

Barley - Leaf blotch (Helminthosporium teres?) was common in most barley fields but was especially conspicuous in Burt, Adams, Franklin, Webster and Nuckolls Counties. Leaf rust was found in trace amounts in 2 fields. Spot

blotch (Septoria passerinii) was present in 2 fields, in one of which (Gage County) most plants were lightly infected. Smut (Ustilago sp.) was found in the few fields now heading. In one early field in Nuckolls County over 20% of the heads were smutted.

Rye - In Douglas and Richardson Counties leaf rust (Puccinia dispersa) [P. rubigo-vera var. secalis] was found in trace amounts in 2 fields, while in Webster County 10% infection was found in one field.
EMERGENCY PLANT DISEASE PREVENTION PROJECT.

DISEASES OF GRASSES IN OKLAHOMA

D. A. Preston

This report contains a list of fungus diseases found on various grass hosts during a disease survey of grasses that were growing in the Federal grass nursery at Oklahoma A. & M. College, Stillwater, Oklahoma on May 3-4, 1944. The collections of Scolecotrichum graminis and Ustilago striaeformis were made in Stillwater, but not in the Federal grass nursery. Each of these represents a new record for Oklahoma. The collections which are starred (*) indicated apparently new host records, since the writer has been unable to locate any published record of them. These collections have been deposited in the Oklahoma A. & M. College Mycological Herbarium.

Anthracnose. (Colletotrichum graminicolum (Ces.) G. W. Wils.)
* Agropyron elongatum (Host) Beauv
* A. intermedium (Host) Beauv.
* A. smithii Rydb.
Bromus marginatus Nees
Dactylis glomerata L.
Elymus junceus Fisch.
Eragrostis trichodes (Nutt.) Nash
Festuca elatior L.
Hordeum bulbosum L.
Poa ampla Merr.
P. canbyi (Scribn.) Piper

Leaf Spot. (Ellisiella caudata (Pk.) Sacc.)
* Agropyron trachycaulum (Link) Malte
Andropogon hallii Hack.
A. scoparius Michx.
Eragrostis spectabilis (Pursh) Steud.
Sorghastrum nutans (L.) Nash

Leaf Streak. (Scolecotrichum graminis Fckl.)
* Alopecurus carolinianus Walt.
Hordeum pusillum Nutt.
H. vulgare L.

Stripe Smut. (Ustilago striaeformis (West.) Niessl)
Poa pratensis L.
EMERGENCY PLANT DISEASE PREVENTION PROJECT

SHORTER REPORTS ON DISEASES OF CEREAL CROPS

BARLEY DISEASES IN PENNSYLVANIA: Four Lancaster County and 8 York County barley fields were entered and disease counts made. Three of the fields consisted of variety Wong and 9 were planted with bearded varieties, probably Tennessee or Kentucky. Plants had reached the hard dough stage in 9 fields while 3 were in the soft dough.

Leaf rust, was present in 9 of 12 fields. Usually, severity amounted to no more than a trace on 5 to 25% of the culms. One field of Wong was affected to the extent of 5% on 100% of the culms.

Stripe, was noted in 2 fields with 1 to 5% of the culms affected.

Spot blotch was noted in 10 of 12 fields. Severity ranged from a trace to 5% of leaf surface affected while field prevalence ranged from 10 to 100% of the culms.

Scab was noted in all fields entered; prevalence ranged from a trace to 3% of the heads affected.

Loose smut, caused by Ustilago nuda, and U. nigra, varied from a trace to 6% and was noted in all fields entered.

Covered smut was noted in 4 of 12 fields with prevalence ranging from 2 to 6%.

Powdery mildew was very destructive in 4 of 12 fields, in these fields from 5 to 40% of the leaf surface on most of the culms was affected. In the remaining fields there was usually a trace on most of the lower leaves of most of the culms. -- Leon J. Tyler, Emergency Plant Disease Prevention Project. June 12.

DISEASES ON WHEAT AND BARLEY IN OREGON: In Washington County, June 6, between Hillsboro and Cornelius Pass, wheat was in the blossoming stage. Few open pustules of stem rust were evident in any field. The leaves were well covered with chlorotic flecks that appeared to be incipient rust infection. Loose smut was found only rarely.

Six-row barley had made excellent growth of straw but heads appeared small in comparison to the leaf and stem development. Scald (Rhynchosporium secalis) was evident but not severe and will not have any effect on the yield. -- Lytton W. Boyle, Emergency Plant Disease Prevention Project.

DISEASES ON CORN AND SORGHUM IN MISSISSIPPI: The week of June 5-10 was spent in the Laurel-Meridian-Prentiss-Columbia area. Dr. E. V. Abbot of the U.S. Sugar Plant Field Station at Houma, Louisiana, accompanied the writer.

A very large acreage is planted to corn in this area. On some farms the plants are in full bloom and on others they are only a few inches high. A trace of leaf spot (Colletotrichum graminicolum) was found on lower leaves of plants near Prentiss in Jefferson Davis County. Traces of brown spot (Physoderma zeae-maydis) were noted near Quitman in Clarke County and Tylertown in Walthall County. Rust (Puccinia sorghi) was noted in several fields throughout the area and appeared to be spreading near Tylertown. A trace of stripe (Helminthosporium turcicum) was found near Prentiss. The same physiogenic condition noted previously at Tylertown (see PDR May 15, p. 454) was observed at Quitman, but did not appear to be so widespread or serious here as at Tylertown.

At the U.S. Sugar Plant Field Station at Meridian, leaf spot (Ascochyta sorghina) and bacterial stripe (Bacterium [Pseudomonas] andropogoni) were noted in sorghum plants introduced from Ethiopia this year. -- Douglas C. Bain, Emergency Plant Disease Prevention Project.

DISEASES ON SWEET SORGHUM IN LOUISIANA: A trace of bacterial stripe and a considerable amount of leaf spot (Phoma insidiosa presumably) were noted in a small planting of sorgho near Opelousas. -- Douglas C. Bain, Emergency Plant Disease Prevention Project. May 29 - June 3.

DISEASES REPORTED ON LEGUMINOUS FIELD CROPS

ALFALFA DISEASES IN MONTANA: During the first 10 days of June alfalfa surveys have been continued in Gallatin, Madison, Jefferson, and Lewis and Clark Counties, and in addition, Beaverhead, Silver Bow, Deer Lodge, Granite, Powell, Missoula, and Ravalli Counties have been visited.

In the areas visited, bacterial wilt (Corynebacterium insidiosum) was found present in irrigated alfalfa, especially in the deep, fertile soils. In the Bitterroot Valley (Ravalli and Missoula Counties), wilt was found causing 75% loss in one field of third-year alfalfa, and about 10% loss in an adjoining field of second-year alfalfa 4 miles east of Hamilton. Winter injury was common on dry land alfalfa, probably associated with crown disease caused by Fusarium (F. oxysporum var. [f.] medicaginis). While wilt was found in the fertile irrigated soils of the eastern slopes of the Bitterroot Valley, it was rarely seen in the shallower gravelly soils west of the River. On these shallower soils a type of dwarfing and yellowing was common, which was tentatively diagnosed as a soil-deficiency disease.

The wet rainy weather of the last 10 days has caused considerably increased losses from bacterial stem blight (Pseudomonas medicaginis) and downy mildew (Peronospora trifoliorum). One field of first year alfalfa was seen, 3 miles northeast of Hamilton, in which the young alfalfa plants were severely stunted by the downy mildew in the upper portion of the stems. The grower estimated his damage in this field at more than 50%.

Downy mildew is now widespread on alfalfa in the whole of the intermountain area in Montana. Its attack is most damaging on first year stands. The strain of the organism present here does not infect clover. Many fields of a 50-50 mixture of alfalfa and red clover (a common mixture in the Bitterroot Valley) were seen in which the alfalfa was so badly infected as to be stunted, but the red clover plants were completely free of disease. -- C.M. Slagg, Emergency Plant Disease Prevention Project.

ALFALFA DISEASES IN COLORADO: Downy mildew and leaf spot (Pseudopeziza medicaginis) were found to be general in both Larimer and Weld Counties. -- E. W. Bodine, Emergency Plant Disease Prevention Project. Week ending June 10.

CONDITION OF PEANUTS IN SOUTHEASTERN VIRGINIA: Peanut stands are variable

in Virginia this year. Many fields have been replanted once and a few twice. On a survey trip June 5 to 7 little was learned as to the cause of the stand failure. At this time the peanuts that had failed to germinate had mostly disintegrated and disappeared. The soil was very dry and, in the very late fields, many ungerminated nuts were present, but appeared to be in condition to germinate if moisture were provided. Earlier in the season the soil had been very wet.

Most reports on failure of stands were based on the use of machine-hulled, untreated seed. Where seed had been treated, and where hand-hulled and sorted seed was planted, much less difficulty had been experienced. With machine-hulled nuts, several growers who had treated before replanting had used untreated seed in a portion of the field. The following counts of the number of plants in adjacent 100-foot sections of row appeared to be representative; 70 (treated) vs. 25 (untreated), 90 vs. 41, and 110 vs. 45. One grower did not treat until his second replanting, this was a man on whose farm seed treatment had given striking results in 1942. The majority of growers, however, are reported to have treated the machine-hulled seed.

The effect of the prevalence of rot of peanuts, caused by Sclerotium rolfsii, in 1943 on the germination of peanuts in 1944 was not determined.

Leaf spot (Mycosphaerella arachidicola) was found on a few leaves June 6 in Isle of Wight County. -- Carlton F. Taylor, Emergency Plant Disease Prevention Project.

DISEASES ON SOYBEAN IN PENNSYLVANIA: Downy mildew, caused by Peronospora manshurica, was present in 2 of 3 fields of soybeans entered (noted in Lancaster County June 8 and in York County June 10). Severity and prevalence ranged from 0.5% on 25% of the plants to a trace on 5%.

Bacterial blight caused by Pseudomonas glycinea, was noted in Lancaster County June 8 in one field also affected by downy mildew. Only a trace of infection existed. -- Leon J. Tyler, Emergency Plant Disease Prevention Project.

FUNGI ASSOCIATED WITH DECLINE OF CITRUS AND AVOCADO IN CALIFORNIA

James V. Harvey

In order to determine the extent to which fungi are the causative agents of decline or collapse of avocadeo and citrus (especially lemon) in California, roots and soils have been taken from both diseased and healthy trees in many localities. Pieces of diseased and healthy roots from the individual trees were incised, washed in water, sterilized in 70% alcohol to destory surface contamination, blotted, and placed upon corn meal agar plates. After three to six days, the plates were examined for their root fungous populations. In this manner, some conception as to what the pathogens are has been obtained.

In the few soil samples examined, an attempt has been made to "trap" fungus species by the use of various substrata, as bits of various seeds -- hemp, buckwheat, lemon, Valencia orange, tangelo, etc., plus very small pieces of rind and albedo of various citrus fruits. Less frequently, soil

was placed directly upon agar. It is of interest to note that the ordinary parasitic fungi were not obtainable from soil.

In the following table, data are given with regard to the distribution of several genera and species, isolated from 3 host types, both diseased and healthy, as well as from soil. Members of the Saprolegniaceae and the Blastocladiaceae are not included, since they were found in soils or run-off water only:

Table 1. Fungi associated with decline of citrus and avocado

GENERA-SPECIES	AVOCADO				LEMON				VALENCIA ORANGE				SOILS	
	Decline		No decline		Decline		No decline		Decline		No decline			
TOTAL SAMPLES	167	%	120	%	36	%	33	%	30	%	14	%	94	%
Phytophthora cinnamomi	91	54.5	17	14.1	1	2.7					1	7.1		
Phytophthora citrophthora					4	10.8								
Phytophthora parasitica	1	0.6	1	0.8	1	2.8								
Phytophthora cactorum	1	0.6												
Pythium vexans	76	45.5	38	31.7										
Pythium ultimum	42	35.1	33	29.1	13	36.1			16	53.3	2	14.3	24	25.5
Pythium deBaryanum	2	1.2	3	2.5									12	12.7
Pythium anandrum	3	1.8	14	11.7									6	6.3
Pythium monospermum	1	0.6												
Pythium sp.	11	6.5	9	7.5	2	5.6					1	7.1	6	6.3
Mucor racemosus	115	69.0	70	58.3	5	13.5					1	7.1	9	9.5
Mucor circinelloides	11	6.5	6	5.0										
Rhizopus	2	1.2												
Thamnidium	6	3.6	12	10.0										
Miscellaneous zygomycetes	3	1.8	5	4.2										
Trichoderma lignorum	38	22.7	30	25.0	1	2.7			2	6.6				
Fusarium #1	151	90.4	117	97.5	33	91.2	1	3.0	20	66.6	4	28.6		
Fusarium #2	20	10.9	20	16.6										
Penicillium	10	5.5	3	2.5										
Geotrichum ?	32	19.0	39	32.5										
Botrytis	2	1.2	1	0.8										
Sporotrichum	1	0.6	1	0.8										
Tilachlidum	1	0.6												
Verticillium	2	1.2												
Miscellaneous ascomycetes	11	6.5	19	15.8										

The preceding table represents tabulations of a three and one-half month period, ending May 31, 1944. Since Phytophthora cinnamomi has occurred more frequently in diseased avocados, this species may be assumed to be of primary importance with respect to pathogenicity. Table 2 gives the geographi-

cal distribution of Phy. cinnamomi by counties and by groves. In this summary, both diseased and healthy trees are considered. The presence of the fungus is indicated by a plus (+) sign and its absence by a negative (-) sign. Possibly, in some areas, such as A in San Diego County, what appears to be decline may be a condition resulting from salt injury or other causes. In grove I in San Diego County, tree injury is thought by some to have been caused by the lack of water rather than its excess.

Table 2. Isolation of Phytophthora cinnamomi: By counties

Grove	Place	Diseased avocado trees		Healthy avocado trees	
		(+)	(-)	(+)	(-)
San Diego County					
A	Carlsbad		7		9
B	"				1
C	La Mesa				1
D	"	1			1
E	"		1		1
F	Escondido	7	2	1	5
G	Vista	2			
H	"	15			
I	"	1	12	2	15
J	"		2		1
K	"			1	3
L	"	1	2		
M	"			1	2
N	"	1	1		1
		28	27	5	40
Orange County					
A	Tustin	1			1
B	"	2			
C	"	1	1		1
		4	1	0	2
Los Angeles County					
A	Pomona	1		1	
B	La Habra	11	6	2	
C	"			1	14
D	"	5	4		1
E	"	1	1		1
F	"	6	3	1	6
G	"		1	3	14
H	"	7	13		
I	"		2		1
		31	30	8	37

Grove	Place	Diseased avocado trees		Healthy avocado trees	
		Santa Barbara County			
		(+)	(-)	(+)	(-)
A	Carpinteria	21	4	1	9
B	Montecito	2			
C	"		1		1
D	Goleta	5	11		10
E	"				2
F	"				3
		28	16	1	25
		Ventura County			
A	Ventura		1		1
B	"		1		
C	"				1
		0	2	0	2
GRAND TOTALS (5 counties)		91	76	14	106

EMERGENCY PLANT DISEASE PREVENTION PROJECT.

CONDITION OF CITRUS GROVES IN FLORIDA

Arthur S. Rhoads

Effects of Drought on Citrus Trees on the East Coast. Citrus groves visited in the vicinity of Cocoa in central Brevard County from February 17-19 showed marked symptoms of distress in a number of cases as a result of the prolonged drought that prevailed. Many of the groves showed a distinct wilting of the foliage and heavy dropping of fruit, which was not limited to midseason oranges but even involved Valencias in some cases. The droughty conditions greatly delayed the development of the spring flush of growth and blooming of the trees. In onelarge grove at Georgiana on Merrit Island, where the trees were said to have been looking good until 3 weeks previously, no general wilting of the trees was apparent but the majority of the orange trees throughout a large part of the grove were more or less severely affected by withertip. The trees were characterized by the foliage of one or more of the branches wilting, dying and dropping, the fruit on the more severely affected branches falling later. Some trees in this grove were so severely affected that a large part of the crown and in some instances one whole side looked as though scorched by fire. Grapefruit trees with the fruit still on did not appear to be affected but in another part of the grove where the fruit had been picked they were about as badly af-

fected as the orange trees. When trees suffer from drought the fruit is quite helpful to some extent in supplying moisture to the tree and frequently becomes decidedly soft as its supply of moisture diminishes. Groves at other points, both to the north and south on Merritt Island, also showed more or less withertip effect as a result of the drought.

Considerable complaint in regard to the development of withertip on citrus trees was heard from growers in the drainage districts west of Vero Beach and Fort Pierce when these areas were visited on February 21 and 22. Numerous groves were found to show this trouble as well as all stages of general wilting and dying back of the tops of trees and heavy fruit dropping. Where groves had been irrigated adequately and in time the trees were in good condition and were beginning to bloom. Where irrigation was not practiced or had been delayed unduly extensive defoliation and dying back of the tops occurred in many cases. In some instances growers with irrigation facilities available were hesitating to use them in the mistaken belief that once irrigation was begun it had to be kept up. In others they were disappointed because irrigation sometimes failed to revive trees that became wilted. This is due to the fact that with trees planted on beds, as is the common practice in these sections, water running down the furrow between two beds does not always wet the root zone since there is frequently little or but slow movement of the water either laterally or vertically within the soil, particularly on the heavier types. Consequently, trees on beds, particularly high ones, by reason of having the majority of the root systems within the first foot of soil may not even be receiving water during or after an irrigation.

Citrus trees in a number of groves in the Redlands section at Homestead (Dade County) on March 2 and 3 also were showing a pronounced wilting as a result of drought. Irrigation appears to have become a necessity in this section for successful citrus culture as the water table of late years has been lowered considerably over its normal level of former years by various drainage projects. Even with irrigation, growth, productiveness, and longevity of trees are definitely curtailed by the rocky and calcareous nature of the soil. This section marketed early grapefruit to good advantage in former years but at present citrus growing, other than limes, has ceased to be profitable.

Citrus Tree Decline at Wabasso. A considerable number of declining citrus trees were observed in a few groves on the barrier reef on the east side of the Indian River near Wabasso (Indian River County) on February 21. In one rather neglected grove a large number of trees were being dug out. The land in this section is low, with very little elevation above the level of the salt water in the Indian River. In fact, mangrove swamps adjoin some of the groves. The trees, which are on sour orange stock, naturally have very shallow root systems. The declining trees were found to have been damaged in local areas by an excessively high water table and the injury was further intensified by the recent prolonged drought, and in some cases grove neglect.

Citrus Tree Decline at Davie. When at Davie (Broward County) on February 25 some attention was given to the problem of the decline of good-bearing citrus trees on muck soils, a trouble that has taken a gradual toll in this section for several years but still remains a complete mystery. This decline usually does not develop until the trees become 12 to 14 years old and attain a good degree of productivity. The trouble is not confined to any particular area in the groves whereit occurs but occurs sporadically on trees at various

points. The affected trees do not appear to develop any pronounced wilting but become thin and die back gradually throughout the crowns. Various soil amendments and nutritional sprays have failed to produce any appreciable results; in fact, no remedial measure of any kind has been found. The decline does not appear to be correlated with either deficits or excesses of soil moisture. It was formerly the practice to dehorn affected trees in the hope that they would recover but it was found that after the tops had developed anew the trees continue to decline. In some large groves the present practice is to pull out such trees and replant. Extensive examination has been made of the root systems at various times, both before and after pulling, and they appear to be in good condition, with no deficiency of fibrous feeding roots. Some trees were being pulled in one grove at the time of my visit. The replants grow well and do not appear to be any more susceptible to the trouble than other trees.

Citrus Tree Decline at Winter Haven. On March 14 and 15 a trip was made to investigate a form of citrus tree decline that was reported to have become serious and very alarming in certain groves in the Eloise section of Winter Haven. The groves in question were visited in company with one of the interested local citrus growers.

Detailed observations were made in one grove on a hammock phase of Norfolk sand which was said to have sold for $3000 an acre several years ago and to be producing between 400-500 boxes of fruit per acre. The trouble was found to occur on grapefruit, orange, and tangerine trees on rough lemon stock, grapefruit trees being most severely affected. The owner stated that it started on a single tree in his chickenyard 6 to 7 years ago and spread until practically every tree on an area of 7 to 8 acres was involved and that it had begun to develop on an adjacent block of Valencia orange trees. He has already dug up 185 fine bearing trees, which were set 60 per acre, and replanted. Replants that had been made a few years ago appeared to be growing nicely. The trees that were dug up were said to have been generally deficient in fibrous feeding roots. This parctical grower has tried without success about everything of promise that he and others could think of. Declining trees around the house have been irrigated and, while they green up temporarily, show no marked improvement but continue to decline. Neither have they responded to various fertilizer treatments and soil amendments.

At the time the trees were examined they showed no particularly striking wilting. However, they were characterized by abnormally sparse foliage and small leaves, which showed some evidence of zinc and magnesium deficiency that was not apparent in adjacent healthy trees. The affected trees continue to bear a moderate amount of fruit from year to year but the fruits tend to be small. The trees appear to die back uniformly throughout the crowns but did not exhibit any tendency to fill up with water sprouts as do trees affected with the chronic wilt and decline that has been designated as "blight". One of the most peculiar and striking features of this unusual form of decline is that there appears as a rule to be an abrupt transition between affected and unaffected trees, with perfectly healthy-looking trees occurring adjoining the margin of the area where the trees are declining. Where the disease appeared to be spreading from grapefruit trees into the Valencia orange trees of an adjacent block, however, a few trees were noted that appeared to be in the incipient stage of decline. In walking around the margin of part of a large affected area the dividing line between the

declining and the healthy trees appeared to follow the contour line. The trouble appeared to have involved all the trees on the crest of a knoll-like eminence but also included some tangerine trees in a depressed area and even had developed to some extent in the margins of adjoining groves, including one across the road. The declining trees at the time of the examination had the appearance of trees that had been adversely affected by drought, yet the land does not appear to be any more subject to drought than many other areas of poorer soils in the Winter Haven section. Moreover, the writer has seen many trees on rough lemon stock that have been more or less completely defoliated by drought but recovered with the advent of good rainfall. However, the soil was found to be dry under the surface of the ground about declining trees after 3 inches of rain which was preceded by about an inch a week or 10 days before that. Like many of the sandy soils in Florida citrus groves, this soil seems to have become repellent to water and is difficult to rewet after it has once become thoroughly dry. It is quite possible that the soil moisture conditions in this grove are not as good as they once were. The grower mentioned that drainage operations had dried up a pond that formerly occurred at the foot of a slope adjoining his grove.

The same peculiar type of tree decline also was observed in another fine-producing grove a considerable distance away. In this case it occurred in 2 isolated areas of large bearing trees, the affected areas comprising about 1 1/2 and 1 acres, respectively. Here again, perfectly healthy-looking and productive trees occurred immediately adjoining the marginal declining trees of the affected areas. In this grove, however, the land was flat and there was no appreciable difference in contour where the affected trees occurred. Moreover, in this grove the declining trees occur on different rootstocks. Trees on sour orange stock were said to have suffered worse than those on rough lemon stock but all were conceded to have suffered severely during the recent drought and had developed considerable dead wood. The trouble was said to have occurred in this grove for about the last 10 years. The symptoms are essentially the same as those described for the preceding grove. This type of decline that involves areas of trees that gradually increase in size and show an abrupt transition to healthy trees was reported recently by the writer (PDR 27 (24): 691. 1943) as having been noted in a grove near Waverly. It is quite distinct from the decline reported as occurring more or less sporadically in the ridge section from Lake Alfred south to Lake Placid and also in Pinellas County on the West Coast.

Another grove near Lake Alfred where trouble from tree decline was reported and trees were being removed was visited. This was a 20-acre grapefruit grove on grapefruit stock, said to be 30 years old, with the trees planted 18 X 24 feet apart on a light, sandy soil very subject to drought. This grove was said to have been irrigated regularly but had the habit of being severely affected by drought before other neighboring groves on rough lemon stock became affected. Irrigation brought the trees out of the wilted condition but they wilted at such frequent intervals that it was impracticable to keep irrigating them often enough. The trees were said to have been partially defoliated and dying back for several years. They bore less and less fruit as they grew older and did well if they bore 5 or 6 boxes of fruit. The grove became so unproductive that it was abandoned and the last of the grapefruit trees had just been pulled when the grove was visited. The root systems appeared to be in good condition but it was noted that only a few of the trees seemed to have much taproot development. It was

planned to transplant to another grove the few orange trees that occurred and replant the area with trees on rough lemon stock. The field foreman stated that his company had done the same thing last year with another similar non-paying grove nearby and that the new trees were growing very well. This appears to be simply a case of the planting of trees on a rootstock that was not adapted to the droughty character of the land. The use of grapefruit rootstock on high sandy land was reported to have been a failure at Eustis, where it was tried rather extensively many years ago. The grapefruit is a voracious feeder and a rampant grower. As a rootstock it is considered to be best adapted to soils with a fairly uniformly high water table. With the exception of Tahiti limes in Dade County it is no longer used as a rootstock but in some sections of the State, notably on the fairly low soils of the Winter Garden area, one frequently finds portions of older groves or scattered trees planted on it. The writer has seen many such trees in former years and they appear to do well and to be fairly productive on the less droughty types of soils, though growers frequently claim that trees on this rootstock tend to be unproductive. The writer has long been favorably impressed with the massive root system and fine bud union made by trees on this stock and still thinks that it has good possibilities if used under the conditions to which it is best adapted.

Deficiency Symptoms of Citrus and Other Trees in Dade County. Symptoms of various deficiencies are of frequent and widespread occurrence on many native and exotic trees on the calcareous (limestone and marl) soils of Dade County. The Dade County Park Commission has done considerable work with corrective nutritional sprays in certain of their roadside plantings, with very beneficial results. The same is also true of the Sub-Tropical Experiment Station at Homestead.

Symptoms of various deficiencies were very prevalent on citrus trees in the Redlands section of Homestead but the leaf patterns often depart rather markedly from those characteristic of trees on sandy soils. Zinc deficiency is prevalent on rocky land and manganese and iron deficiencies occur commonly on marly land or where marl was used in setting trees. Magnesium deficiency is also prevalent and appears to be corrected but very slowly by soil applications, about 2 years being required according to tests conducted at the Sub-Tropical Experiment Station. There is plenty of iron in the soils of this section but the high calcium carbonate content of the soil precludes its availability. Nutritional sprays under the conditions existing at Homestead have to be quite concentrated to be effective. Mixtures containing as high as 5 lbs. each of $ZnSO_4$, $MnSO_4$, and $CuSO_4$, with 2 1/2 lbs. of lime allowed for each, in 100 gals. of water are used. When the full quota is used the mixture is soupy in consistency. Irrigation, while rendering the leaves turgid, is very ineffective in comparison with rain since the water is saturaged with calcium carbonate and does not tend to dissolve mineral elements. The occurrence of drought intensifies deficiencies.

Stylar-end Rot and Decay of Lakeland Limequats. A grower with 30 acres of Lakeland limequats on Cleopatra mandarin stock 3 1/2 miles north of Groveland and who was interviewed on January 7 reported considerable fruit loss from stylar-end rot. This is an important trouble at times on Tahiti limes and has been considered to be due to a physiological breakdown of the fruit. This grower stated that he lost an average of one bushel out of 20 from this trouble when the bulk of his fruit was picked in August and

September. All fruit that was observed to be affected in the field was discarded at the time of picking. However, complaints were received from stores to which the fruit was sold of the trouble developing in fruit that did not show it when picked. In many cases affected fruit decayed rapidly. This grower also stated that he had experienced a great deal more decay in fruit picked early in the morning while still wet than in that picked later during the day. He was of the opinion that the development of the stylar-end breakdown and accompanying decay of the fruit was aggravated by heavy fertilization practiced to stimulate growth and production.
EMERGENCY PLANT DISEASE PREVENTION PROJECT.

OTHER REPORTS ON DISEASES OF FRUIT CROPS

APPLE SCAB IN MAINE: Apple trees are receiving their third and fourth sprayings in southern and central Maine. Apple scab (Venturia inaequalis) can be found only as widely scattered infections. -- Robert C. Cassell, Emergency Plant Disease Prevention Project. June 12 - 14.

SCAB AND OTHER DISEASES OF APPLE IN NEW YORK: (Reports from Weekly News Letter for dates indicated). According to W. D. Mills (June 5), more than 90% of the ascospores had been discharged from a McIntosh leaf sample at Ithaca, June 4. Scab lesions from infections during the latter part of April were observed in Ulster County on May 9 (C. C. Gillette, May 22) and in Orange County May 11 (J. D. VanGeluwe, May 22). By the last week in May it had appeared generally on leaves, apparently in light infections in most cases, although in some counties in some orchards at least it was abundant. In Niagara County L. A. Putnam reported (May 29) "Apple scab was showing up plainly on May 22 and some orchards not well sprayed are very heavily infested. Pedicel infection may take off most of the crop in a few orchards". In Wayne County, according to C. G. Small (May 29), scab was abundant in poorly sprayed orchards and could usually be found in well-sprayed blocks. Later (June 1.) he reported "Apple scab continues to be a problem, with infection largely confined to leaves but with some fruit scab developing on unsprayed trees. Some pedicel scab was noted in sprayed orchards on June 10. One orchard was observed where lime-sulfur has severely burned leaves covered with a heavy infection of scab." In Onondaga County, W. E. Willis reported (May 29) "Apple scab is showing up in orchards in all parts of the county. Growers indicate that it appears to be a lighter infestation than last year, mainly because weather has favored slightly better control. It has been found most serious on the edges of orchards, near unsprayed fruit on neighboring farms. Some growers have been able to get lime-sulfur on to burn out the early infections. The widespread unevenness of development in all orchards has complicated scab control with lime-sulfur. Blossom, foliage, and young fruit injury have been seen in one orchard, all caused by the same spray application", and later (June 12) "Additional drop of some young fruits is being noted and some are infected with pedicel scab." Pedicel infection is also reported from Clinton County by A. B. Burrell (June 5), who states that it is common there and appears to have been a factor in preventing the setting or causing early dropping of McIntosh fruits.

According to A. T. Williams, galls of the apple rust fungus (Gymnosporangium juniperi-virginianae) were still swelling as late as June 3 in Dutchess County, where lesions had been noted on appleleaves at the end of May (June 12, May 29). Foliage infection appeared in Rockland County June 6 (W. J. Clark, June 12).

Early infections of fireblight were appearing in Onondaga County, especially in orchards near pears (W. E. Willis, June 12) and a severe outbreak was noted on Twenty Ounce in Monroe County (R. S. Granger, June 12).

PEAR LEAF BLIGHT IN MISSISSIPPI: The week of June 5 to 10 was spent in the Laurel-Meridian-Prentiis-Columbia area. Extremely severe defoliation of sand pear caused by Fabraea maculata is general throughout the area. The varieties LeConte and Kieffer appear to ve very resistant to the fungus. -- Douglas C. Bain, Emergency Plant Disease Prevention Project.

DISEASES REPORTED ON STONE FRUIT CROPS IN NEW YORK: (Reports from Weekly News Letter for dates indicated). Brown rot (Monilinia fructicola) is reported as follows:

Columbia County--Brown rot is showing up in both sweet and sour cherries (May 29) (W. H. Palmer).

Niagara County--Brown rot is plentiful on sweet and sour cherries especially along the Lake. Very little brown rot has been observed on peaches as yet (May 29). Some brown rot is showing up in early varieties of peaches (June 5). Brown rot is present on early peaches, primarily, in amounts sufficient to cause trouble if conditions are right (June 12). (L.A. Putnam).

Orleans County--Brown rot blossom blight has show up in sweet and sour cherries and peaches. In better sprayed orchards it has not reduced the crop very much (May 29). Brown rot is showing up on sweet cherries (June 12). (C. G. Maier).

Monroe County--Brown rot was very destructive in sweet cherries that did not get a pre-blossom spray and was quite serious in some Montmorency orchards (May 29). Brown rot continues to do some damage in sweet cherry orchards. Sour cherries generally have set a light crop; brown rot is destroying an excessive number of blossoms in a few orchards (June 12) (R. S. Granger).

Wayne County--The outstanding development of the week was a severe outbreak of brown rot blossom blight on Montmorency sour cherries in the Lake zone with damage so heavy as nearly to wipe out the crop in some orchards. Evidently the infection started in the rain of May 22 when Montmorency blocks were in nearly full bloom (just past) along the lake. Orchards further inland were more advanced at that time, some having already received the petal-fall spray, and blossom blight is progressively less severe as the distance from the lake increases (May 29). Brown rot on sour cherries reported last week seems to have followed the frosts of May 18 and 19 as it is worst in orchards where blossoms were reported as most severely browned. It was not severe enough to account for the reduction of set in some orchards, indicating the frost or failure to pollinate was the cheif factor. Brown rot infections were found on cherry leaves on May 21, but only where a petal had become attached to the leaf (June 5) (C. G. Small).

Rockland County--Brown rot infection on sweet cherries has increased lately (June 5) (W. J. Clark).

Orange County--Brown rot became threatening in sweet cherries after the

long rain late in May (June 12) (J. D. VanGeluwe).

Schuyler County--Sweet cherries are falling badly due to 2 or 3 factors: brown rot, undeveloped embryos, and frost about 2 weeks ago. It appears that nearly half of the sweets are affected.

Extremely heavy infection by peach leaf curl (Taphrina deformans) was observed in one small planting in Wayne County on May 26, according to C. G. Small (May 29). R. S. Granger reported the disease very serious in unsprayed orchards in Monroe County (June 12).

Cherry leaf spot (Coccomyces hiemalis) was observed in Wayne County on June 7, where the spots were well developed, according to C. G. Small (June 12).

PEACH DISEASES OBSERVED IN MISSISSIPPI: In one small orchard near Laurel a considerable amount of brown rot and of scab (Cladosporium carpophilum) was noted on the fruits.--Douglas C. Bain, Emergency Plant Disease Prevention Project.

TARGET LEAF SPOT OF PAPAYA IN FLORIDA: A comparatively new leaf spot of papaya, designated as target leaf spot, was observed at the Subtropical Experiment Station at Homestead, where it has proved more serious than the well-known black leaf spot (Asperosporium [Mycosphaerella] caricae). This disease, which is being studied by Dr. George D. Ruehle, pathologist in charge of this station, has become rather widespread in Dade County and has also been observed in Palm Beach County. It is considered by Dr. Ruehle to be the same as that described as "Muerte del margen de la hoja (Phyllosticta sp.)" by Acuno and Zayas (Revista de Agricultura [Cuba] 23:59. 1939/40), later determined to be P. caricae-papayae. As has been aptly described by Ruehle (Florida Agr. Exp. Sta. Ann. Rept. 1941/42: 198), the spots begin as small, necrotic area, more numerous near the margins of the leaves, and enlarge rapidly in a symmetrical fashion, becoming roughly circular in outline. A target-like effect soon results from the development of numerous black perithecia arranged in concentric rings. The centers of the spots eventually disintegrate, resulting in a ragged appearance of the leaf when infections are numerous. The fungus that was fruiting on material collected by the writer proved to be a species of Mycosphaerella, as Ruehle had already found. The pathogenicity of this fungus has not as yet been demonstrated. -- Arthur S. Rhoads, Emergency Plant Disease Prevention Project.

BLACK ROT LEAF SPOT ON SCUPPERNONG GRAPE IN MISSISSIPPI: In the Laurel area, leaf spot (Guignardia bidwellii) was noted in a rather large arbor. There was a considerable amount of the disease on the leaves but none was noted on the very young berries.--Douglas C. Bain, Emergency Plant Disease Prevention Project. June 5 - 10.

DISEASES OF BRAMBLE FRUITS IN OREGON: In raspberry plantings observed June 8, in the vicinity of Gresham in Multnomah County, "decline" due to virus infection was causing serious loss. Evidence of this could be noted from the roadway without entering the fields. No planting of several years standing was noted to be entirely free.

Mosaic was quite prevalent on Loganberry. From traces to as high as 80% infection was noted in plantings several acres in extent.

Cankers due to Septoria rubi were evident on blackberry canes in several

plantings. Dieback symptoms were also evident but less severe than had been observed in other areas. The largest amount of dieback observed,--by chance, no special search being made--was estimated to be about 7% of the canes. -- Lytton W. Boyle, Emergency Plant Disease Prevention Project.

BOTRYTIS ROT OF CURRANT IN NEW YORK: In Orange County, Botrytis rot became threatening in currants after the long week of rain late in May, but dry weather the past 2 weeks has helped. If warm wet weather should occur this month, currants will need a special spray prior to picking.--J.D.Van-Geluwe, Weekly News Letter, June 12.

STRAWBERRY DISEASES IN MISSISSIPPI: The berry season in the Meridian area is nearly over. Little rotting of fruit was noted at this time, however, Mr. N. H. Loomis, of the Meridian Station, indicated that there had been considerable loss from rot earlier in the season. A small percentage of tan rot (Pezizella lythri) was noted in berries of the Fairmore and Klondyke varieties. Angular leaf spot (Dendrophoma obscurans) was very conspicuous on leaves of Fairmore plants and there was also a small amount of Mycosphaerella fragariae, leaf spot, and Diplocarpon earliana, leaf scorch, on this variety. No angular leaf spot was observed in plants of the Klondyke variety but considerable damage had been done by leaf spot and leaf scorch. -- Douglas C. Bain, Emergency Plant Disease Prevention Project. June 5 - 10.

BRIEF NOTES ON PLANT DISEASES

DISEASES OF SUGARCANE IN MISSISSIPPI: The period from June 5 to 10 was spent in the Laurel-Meridian-Prentiss-Columbia area. Dr. E. V. Abbott of the U. S. Sugar Plant Field Station at Houma, Louisiana, accompanied the writer.

Several small acreages of cane are grown in this area of the State for making syrup. The variety Co. 290 appeared to be the most commonly planted, with P. O. J. 213 (?) and C. P. 29/116 following. Occasionally Ribbon cane (either Louisiana Purple or Striped) was found. With the exception of C. P. 29/116, all these varieties are very susceptible to certain strains of mosaic (virus), and this disease was found in practically all of the several fields surveyed. The percentage of infected plants varied from about 2 in one field of Co. 290 to 100 in P. O. J. and Ribbon. None was found in C. P. 29/116. Most of the stands of Co. 290, P. O. J., and Ribbon were very irregular, both in plant and stubble cane. It is possible that red rot (Colletotrichum falcatum) was responsible for this general condition, since a large percentage of seed cane banked at the Meridian Station had to be discarded on account of this disease.

It was interesting to note that one stool of Co. 290 in a field near Carriere showed mosaic of an unusually severe pattern. The mottling was outstanding but there was no necrosis. Generally, in this variety the mosaic pattern is rather mild and the severe pattern is rare. -- Douglas C. Bain, Emergency Plant Disease Prevention Project.

MAY WEATHER

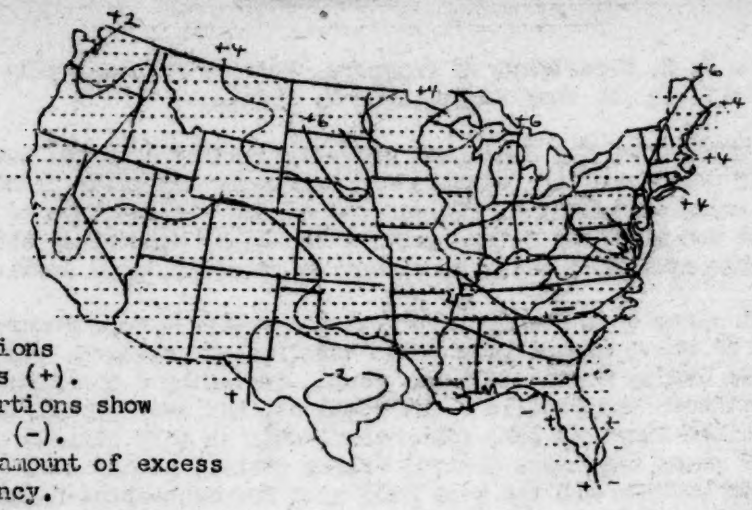
(From U. S. Department of Commerce, Weather Bureau, Weekly Weather and Crop Bulletin for Week ending June 6, 1944).

The weather of May 1944, was characterized by abnormal warmth over the greater portion of the country and extremely irregular rainfall as geographically distributed. It was one of the warmest Mays of record in central and northern States east of the Rocky Mountains, and while considerable areas had heavy to excessive rainfall, some sections were very dry.

Map 1 shows that the monthly mean temperatures were generally from 4° to around 8° above normal from North Carolina, Tenneessee, and the lower Missouri Valley northward. The South, including a considerable area of the Southwest and Pacific coast sections, had near-normal warmth, but the temperature averaged less than normal only in very limited areas.

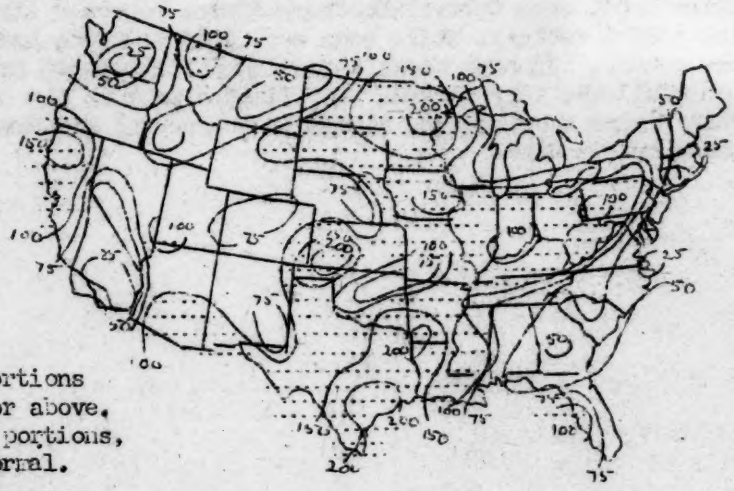
Map 2 shows that most Central Valley States, a considerable central-northern section and the west Gulf area had much-above-normal precipitation, while in the Atlantic States the amounts were decidedly scanty. The greatest moisture deficiencies occurred from southern New England southward to eastern Virginia where many stations reported less than half the normal monthly amount. For example, rainfall in the District of Columbia was only 1.02 inches, making it the third driest May since 1875, while the monthly mean temperature was 71.6°, the highest in more than a century.

On the other hand, some Central-Northern States reported the wettest May in more than half a century, while some west Gulf sections had in excess of twice the normal. In many cases the delineation between extremely heavy and light rainfall was very marked. The limited area in the extreme northwestern Great Plains showing less than half the normal had heavy falls during the first week in June.



Shaded portions show excess (+).
Unshaded portions show deficiency (-).
Lines show amount of excess or deficiency.

Map. I - Departure of mean temperature from the normal for May 1944.



Shaded portions normal or above.
Unshaded portions, below normal.

Map. II - Percentage of normal precipitation, for May 1944.